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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/720,181

11/25/2003

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Q78454

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23373 7590 05/14/2007
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EXAMINER

MALEK, LEILA

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

05/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary

Application No.

10/720,181

Applicant(s)

BAUMERT, WOLFGANG

Examiner

Leila Malek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/25/2003
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed on 12/30/2002. It is noted, however, that applicant has not filed a certified copy of the (EPO) 02 360 382.2 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

2. The information disclosure statement submitted on 11/25/2003 has been considered and made of record by the examiner.

Drawings

3. The drawings are objected to because elements in Figs. 3-5 have not been properly labeled. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

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examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the invention comprises word "said".

Claim Objections

5. Claims 6-13, 17, and 18 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim (4) may not serve as a basis for any other multiple dependent claim, either directly or indirectly. See MPEP § 608.01(n).

Accordingly, claims 6-13, 17, and 18 have not been further treated on the merits.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. As to claims 1 and 14, the meets and boundaries of the claims are not determined.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps. See MPEP § 2172.01. The omitted steps are the steps cited in claim 2.

Claims 14-18 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements. See MPEP § 2172.01. The omitted elements are the elements cited in claim 15.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ellermeyer et al. (hereafter, referred as Ellermeyer) (see the Information Disclosure Statement).

In view of vague and indefiniteness of claims 1 and 14, as explained above, the claims have been interpreted as broad as possible. As to claims 1 and 14, Ellermeyer discloses a method of determining an eye diagram of a digital signal, wherein by determining an eye width of the eye diagram (see page 1958, right column, first and second paragraphs).

As to claim 2, Ellermeyer further discloses obtaining a first phase difference information corresponding to a first phase difference between the digital signal and a clock signal (i.e. CK0 of a quadrature clock) associated to the digital signal (see page 1958, right column, lines 33-36 and page 1960, left column, lines 5-7); obtaining a second phase difference information corresponding to a second phase difference between the digital signal and the clock signal (i.e. CK90 of a quadrature clock); and determining the eye width based on the first phase difference information and the second phase difference information (see Figs. 4, 5 and see page 1958, right column, lines 31-33).

As to claim 15, Ellermeyer discloses obtaining a first phase difference information corresponding to a first phase difference between the digital signal and a clock signal (i.e. CK0 of the quadrature clock) associated to the digital signal (see page 1958, right column, lines 33-36 and page 1960, left column, lines 5-7); obtaining a second phase difference information corresponding to a second phase difference between the digital signal and the clock signal (i.e. CK90 of the quadrature clock), determining the eye width based on the first phase difference information and the second phase difference information (see Figs. 4, 5 and see page 1958, right column, lines 31-33). Ellermeyer further discloses integrating means (see page 1961, left column, line 6) for integrating the first phase difference information and the second phase difference information to obtain a first phase difference voltage and a second phase difference voltage (see page 1959, right column, second paragraph and Fig. 4). Ellermeyer further discloses determining an eye width voltage (See page 1959, right column, second paragraph)

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based on the first phase difference voltage (difference between the data and clock0) and on the second phase difference voltage (difference between the data and clock90) (see page 1960, left column, lines 5-7), wherein the eye width voltage corresponding to said eye width of the eye diagram (See page 1959, right column, second paragraph).

As to claim 16, Ellermeyer further discloses phase adjustment means for adjusting a phase of the clock signal (see Fig. 4 and the conclusion).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellermeyer, in view of Akashi (SU 6,178,212).

As to claims 3 and 4, Ellermeyer discloses all the subject matters claimed in claim 2, except that the first phase difference is measured between the digital signal and a rising edge of the clock signal, the rising edge corresponding to a start of a bit time, and in that the second phase difference is measured between the digital signal and a falling edge of the clock signal, the falling edge corresponding to an end of said bit time. Akashi, in the same field of endeavor, discloses a retiming circuit (see Fig. 4), comprising a first phase difference detection unit 21 and a second phase detection difference unit 22, wherein the first phase detector comprises a first clock rising detection circuit 21 for detecting the rising edge of the reference clock, a data rising

edge detection circuit 212 for detecting the rising edge of the input data, and a first voltage producing circuit 213 for receiving as its inputs the outputs of the first clock rising detection circuit 211 and the data rising detection circuit 212 and outputting the first voltage V_r proportional to the period (i.e. the phase difference) from the rising edge of the reference clock to the rising edge of the input data (see Fig. 6 and column 7, lines 23-32). Akashi further discloses that the second phase difference detection unit 22 comprises a second clock rising detection circuit 221 for detecting the rising edge of the reference clock, a data falling detection circuit 222 for detecting the falling edge of the input data, and a second voltage producing circuit 223 for receiving as its inputs the outputs of the second clock rising detection circuit 221 and the data falling detection circuit 222 and outputting the second voltage V_f proportional to the period from the rising edge of the reference clock to the falling edge of the input data (see Fig. 7 and column 7, lines 40-50). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Ellermeyer as suggested by Akashi to determine the center portion of the signal pulses more accurately, (see column 1, lines 10-39) and reduce the bit error rate. Ellermeyer and Akashi disclose all the subject matters claimed in claim 3, except that data signal has been compared to the rising and falling edges of the clock signal. However, it is a matter of design choice¹ to measure the phase differences between the digital signal and a rising edge of the clock signal, and the digital signal and a falling edge of the clock signal, instead of the method taught by Akashi. Therefore, it would have been obvious for one of ordinary skill in the art at the

¹ (e.g. see Nakamura (US 6,421,404), Fig. 1, columns 1 and 5)

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time of the invention to use alternative designs that were known to one of ordinary skill in the art.

As to claim 5, Ellermeyer further discloses determining an eye width voltage (See page 1959, right column, second paragraph) based on a first phase difference (difference between the data and clock0) and on a second phase difference (difference between the data and clock90) (see page 1960, left column, lines 5-7), wherein the eye width voltage corresponding to the eye width of the eye diagram (See page 1959, right column, second paragraph).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leila Malek whose telephone number is 571-272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek
Examiner
Art Unit 2611

L.M.


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER